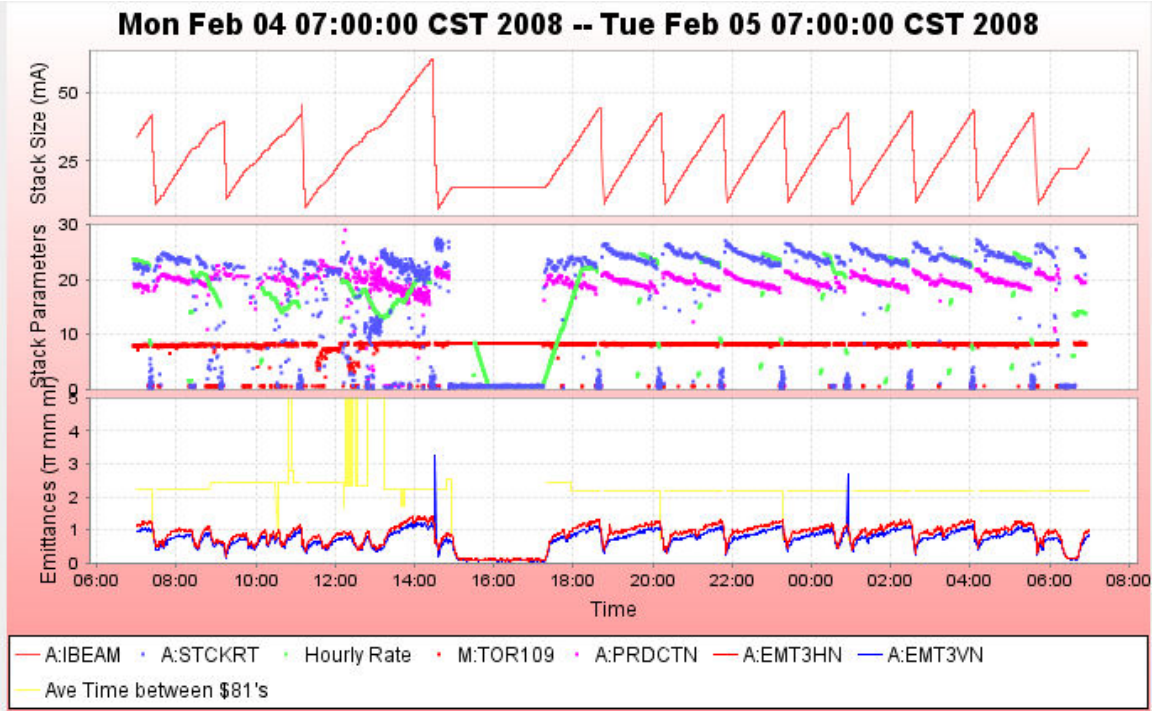
2008-02-05 Tuesday Morning Pbar Notes

Monday, February 04, 2008
3:31 PM

Stacking

- Protons on target:
  - 11 turn stacking beam was up in intensity, starting the day at about 7.4e12, running 7.6e12 overnight, and up to 7.7e12 this morning.
- Stacking improved yesterday after DRF1-4 was brought back online, with our best stacking hour yielding 24.17mA.
- Average production efficiency was 18.27 e-6/proton.
- We stacked 410mA over 24 hours.
- DRF1-4 repairs were completed yesterday.
  - The DRF1 fanback voltage is around 5.2MV with DRF1-4 and about 4.3MV without DRF1-4.
  - The bad news is DRF1-4 continues to spark periodically.
  - It was came into alarm 190 times over the last 24 hours and the output is drooping a little.
  - We can run without the station, but take a small hit on production.
  - Experts suspect that complete repairs may require a Pbar Rings access at some point.



Transfers

- Unstacked 417e10 in 36 transfers over 12 sets.
  - Accumulator to MI efficiency was 96.6%
  - Accumulator to Recycler efficiency was 91.1%
- Transfer 7063 was only 82% due to a Recycler ramp study, bringing down our

- average.
  - Studiers were changing the time that the MI bend bus at RR 8 GeV level. We should get more details in the RR report.
- We are still trying to sort out the drop in measured transfer efficiency since last week's DCCT work to verify that there are not other problems. We have not found any problems with Pbar yet.
- A:IBEAM1 was missing from Transfer 7061, as well as a few others. This is a possible MADC issue, and we will look into this today.

Column 1 Pbar Transfer Shot #	Column 2 Recycler Shot #	Column 4 Transfer Time		Column 21 A:IBEAMB sampled on $91 (A:IBEAM1), E10	Column 22 A:IBEAM B sampled on $94 (A:IBEAM	Unstacked (mA)	Column 23 R:BEAMS (R:BEAM E0[0]) pre xfer E10	Column 24 R:BEAM (R:BEAM E0[1]) post xfer, E10	Stashed	Acc to RR Eff	Column 27 MI DCCT SMALL BEAM (I:BEAMS), E10	Column 28 MI Before Extraction (I:BEAM6), E10	Acc to MI Eff	Acc to MI2 Eff	Transfers	Sets
		2/5/2008	7:00:00 AM			416.597			379.60	91.12%	402.580	401.247	96.64%	96.32%	36	12
7063	4532	Tuesday, February 05, 2008	5:36:29 AM	42.988	9.388	33.600	268.096	295.429	27.33	81.35%	32.061	31.770	95.42%	94.55%	3	1
7062	4531	Tuesday, February 05, 2008	4:06:14 AM	43.588	10.388	33.200	238.921	269.046	30.13	90.74%	32.215	32.072	97.03%	96.60%	3	1
7061	4530	Tuesday, February 05, 2008	2:31:22 AM	42.988	9.788	33.200	209.497	239.664	30.17	90.86%	31.533	31.204	94.98%	93.99%	3	1
7060	4529	Tuesday, February 05, 2008	12:55:56 AM	42.787	9.388	33.399	179.096	210.101	31.01	92.83%	32.573	32.732	97.53%	98.00%	3	1
7059	4528	Monday, February 04, 2008	11:18:06 PM	43.388	9.788	33.600	148.933	179.758	30.83	91.74%	31.996	32.836	95.23%	97.73%	3	1
7058	4527	Monday, February 04, 2008	9:46:32 PM	41.988	10.188	31.800	120.129	149.267	29.14	91.63%	30.686	29.909	96.50%	94.05%	3	1
7057	4526	Monday, February 04, 2008	8:12:32 PM	42.588	9.388	33.200	89.870	120.425	30.56	92.03%	32.393	31.787	97.57%	95.74%	3	1
7056	4525	Monday, February 04, 2008	6:40:44 PM	44.387	9.588	34.799	57.959	90.121	32.16	92.42%	33.689	33.900	96.81%	97.42%	3	1
7055	4524	Monday, February 04, 2008	2:28:42 PM	62.787	7.788	54.999	8.646	58.481	49.84	90.61%	52.981	52.611	96.33%	95.66%	4	1
7054	4522	Monday, February 04, 2008	11:10:04 AM	42.188	8.188	34.000	273.337	305.179	31.84	93.65%	33.353	33.619	98.10%	98.88%	3	1
7053	4521	Monday, February 04, 2008	9:11:46 AM	39.588	11.388	28.200	247.668	274.401	26.73	94.80%	27.761	27.365	98.44%	97.04%	2	1
7052	4520	Monday, February 04, 2008	7:23:53 AM	41.988	9.388	32.600	218.716	248.594	29.88	91.65%	31.339	31.442	96.13%	96.45%	3	1

Studies

- Debuncher Cooling Studies
  - http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=52&scroll=false&load=
  - Experts found that not only does the temperature drift on the bypass filter for the long leg impact the measurements, but the measurements themselves impacts the results.
  - Changes were made that originally made things worse, but a trunk trombone change seemed to help. We are leaving the changes in for a few days to see how it works.

Requests

- Debuncher Gain Ramping Software
  - Pbar experts are developing software to more efficiently load Debuncher momentum gain ramp curves.
  - They may want to test the code today. This can be done transparently.
  - **The Run Co gives the OK to do this.**
- Debuncher Gain Ramping Study
  - Requires stable running conditions.
  - First iteration is two hours.
  - Studiers are willing to come in on the evening shift for this study if conditions are not stable enough on the day shift.
    - Freezing rain with strong winds followed by heavy snow is in the forecast for tonight, so if the start time of the study gets too late, we would likely hold off until tomorrow.
  - We should be ready for this study by tomorrow.
- P1 Line Optics change
  - Experts are ready to put in P1 line optics changes.

        - Experts are ready to put in P1 line optics changes.
        - The changes are relatively small and can be done parasitically before the next transfer.
        - **The Run Co approves this.**
    - Target Move
        - It is time to move the target to the next position.
        - Experts will examine target efficiency closely and either do this change today before the MI access or tomorrow during the day.
        - **The Run Co approves this.**
    - Future Debuncher Cooling Studies.
        - Later in the week experts will likely be asking to make parasitic changes to the Debuncher Momentum Bands 1 and 2 systems.

Other Notes:

- Paul's Numbers
    - Most in an hour: 24.17 mA at Tue Feb 05 05:11:44 CST 2008
    - Best: 25.19 mA on 30-Jan-08
    - Average Production 18.27 e-6/proton Best: 25.41 e-6/proton on 01/30/2008
    - Average Protons on Target 6.77 e12 Best: 8.77 e12 on 07/24/2007
    - Largest Stack .00 mA Best: 271.01 mA on 11/14/2007
- Al's Numbers
    - Stacking
        - Pbars stacked: 409.03 E10
        - Time stacking: 20.02 Hr
        - Average stacking rate: 20.43 E10/Hr
    - Uptime
        - Number of pulses while in stacking mode: 31446
        - Number of pulses with beam: 28685
        - Fraction of up pulses was: 91.22%
    - The uptime's effect on the stacking numbers
        - Corrected time stacking: 18.26 Hr
        - Possible average stacking rate: 22.40 E10/Hr
    - Recycler Transfers
        - Pbars sent to the Recycler: 414.38 E10
        - Number of transfers : 36
        - Number of transfer sets: 12
        - Average Number of transfer per set: 3.00
        - Time taken to shoot: 01.57 Hr
        - Time per set of transfers: 07.87 min
        - Transfer efficiency: 91.60%
    - Other Info
        - Average POT : 7.52 E12
        - Average production: 18.96 pbars/E6 protons